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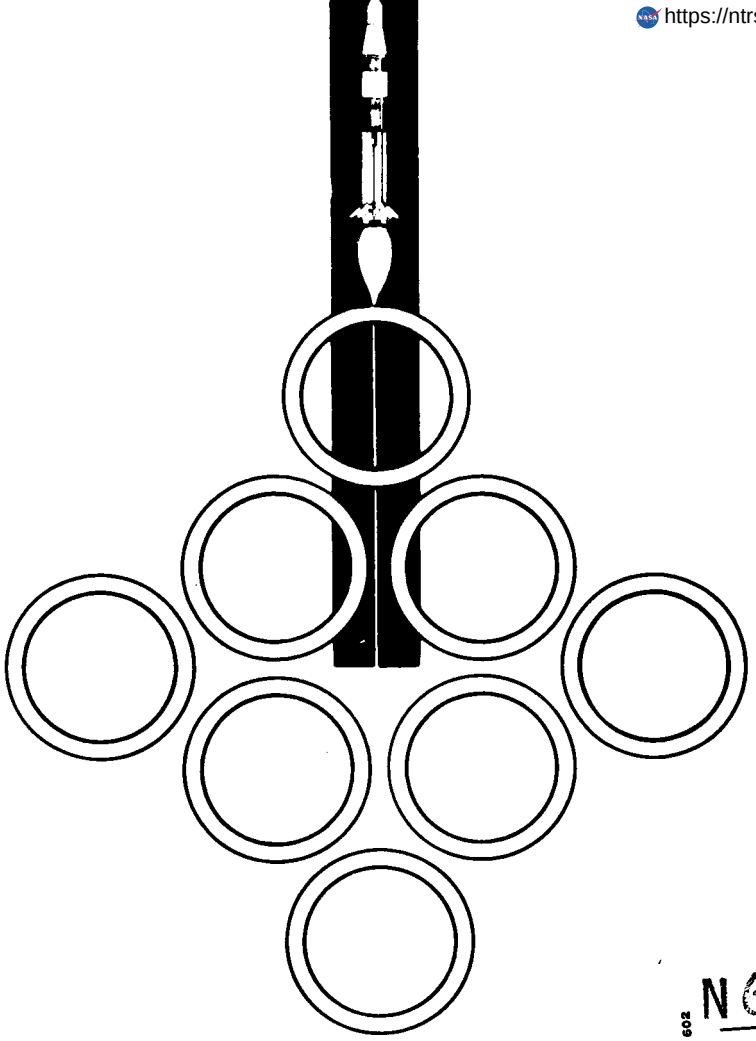

ENGINEERING DEPARTMENT

TECHNICAL REPORT

TR-RE-CCSD-FO-1087-3

January 24, 1967

SATURN IB PROGRAM

TEST REPORT FOR

PRESSURE GAUGE, 6-INCH, 0-TO 30-PSIG

U. S. Gauge Company Part Number 1803

NASA Drawing Number 75M09618 PPG-2

SPACE DIVISION CHRYSLER CORPORATION

TEST REPORT

FOR

PRESSURE GAUGE, 6-INCH, 0-to 30-PSIG
U. S. Gauge Company Part Number 1803
NASA Drawing Number 75M09618 PPG-2

ABSTRACT

This report presents the results of tests performed on one specimen of Pressure Gauge 75M09618 PPG-2. The following tests were performed:

1. Receiving Inspection
2. Functional Test
3. Surge Test
4. Cycle Test
5. Burst Test

The specimen performance was in accordance with the specification requirements of NASA Drawing 75M09618 PPG-2 throughout the test program.

TEST REPORT

FOR

PRESSURE GAUGE, 6-INCH, 0-TO 30-PSIG

U. S. Gauge Company Part Number 1803

NASA Drawing Number 75M09618 **PPG-2**

January 24, 1967

CHRYSLER CORPORATION SPACE DIVISION - NEW ORLEANS, LOUISIANA

3185-3-6-67

FOREWORD

The tests reported herein were conducted for the John F. Kennedy Space Center by Chrysler Corporation Space Division (CCSD), New Orleans, Louisiana. This document was prepared by CCSD under contract NAS8-4016, Part VII, CWO 271620.

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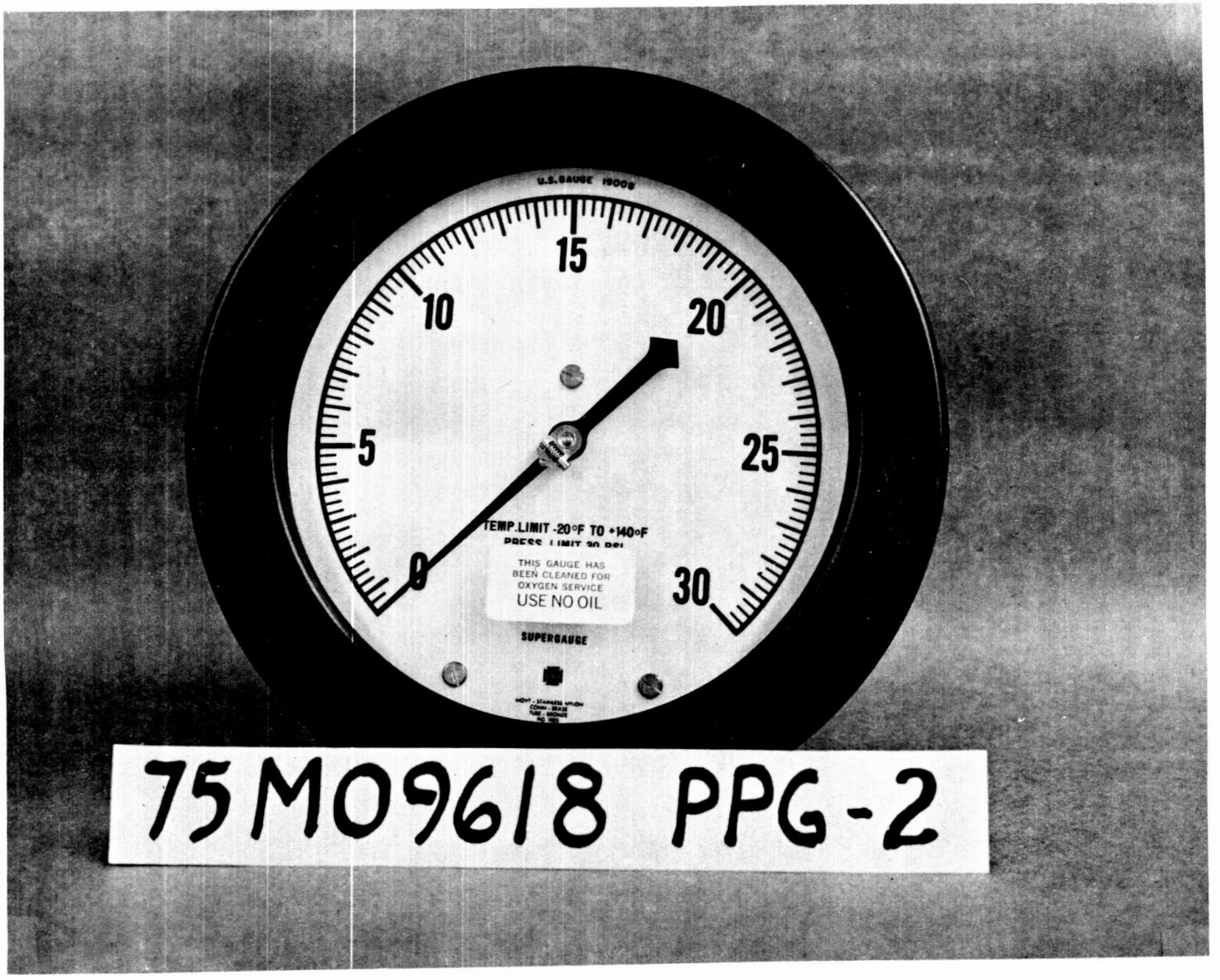


0 to 30-psig Pressure Gauge 75M09618 PPG-2

CHECK SHEET

FOR

0- TO 30-PSIG PRESSURE GAUGE

MANUFACTURER: U. S. Gauge Company
MANUFACTURER'S PART NUMBER: 1803
NASA DRAWING NUMBER: 75M09618 PPG-2
TEST AGENCY: Chrysler Corporation Space Division, New Orleans, Louisiana
AUTHORIZING AGENCY: NASA KSC

I.	FUNCTIONAL REQUIREMENTS	
	A. OPERATING MEDIUM:	He or GN_2
	B. OPERATING RANGE:	0 to 30 psig
	C. ACCURACY:	1 per cent of full scale for middle (working) half of scale and 1.5 per cent of full scale for the remainder.
II.	CONSTRUCTION	
	A. MATERIAL:	Case - aluminum Bourdon Tube - phosphor bronze Meter Movement - SST and Nylon Dial Cover - nonshatterable glass Socket and Connection - forged brass Ring - steel Dial - steel
	B. GAUGE SIZE:	6 inches
	C. CONNECTION:	$\frac{1}{4}$-inch male NPT
	D. GAUGE MOUNTING:	Front Flange Mounting
III.	ENVIRONMENTAL CHARACTERISTICS	
	A. TEMPERATURE RANGE:	-20°F to +140°F
IV.	LOCATION AND USE:	The gauge is used at Launch Complex 34 in the pneumatic distribution portion of the propellant systems.

TEST SUMMARY

PRESSURE GAUGE, 6-INCH 0-TO 30-PSIG

75M09618 PPG-2

Environment	Units	Operational Boundary	Test Objective	Test Results	Remarks
Receiving Inspection	1	Comply with NASA drawing 75M09618 PPG-2	Determine compliance with NASA and vendor drawings and examine for defects or poor workmanship	Satisfactory	-
Functional Test	1	1% of full scale indication for middle half of scale; 1.5% for remainder of scale	Check specimen against laboratory gauge for accuracy	Satisfactory	Maximum error was 0.66% of full scale
Surge Test	1	0 to 20 psig within 100 milliseconds 20 cycles	Determine if cyclic pressure surges will cause degradation or deformation	Satisfactory	Maximum error was 0.6% of full scale
Cycle Test	1	0 to 30 to 0 psig within 10 seconds 40,000 cycles	Determine if cycling will cause degradation or deformation	Satisfactory	Maximum error was 1.0% of full scale
Burst Test	1	120 psig for 5 minutes	Determine if abnormally high pressure will cause leakage or structural damage	Satisfactory	No leakage

SECTION I

INTRODUCTION

1.1 SCOPE

This report presents the results of tests that were performed to determine if pressure gauge 75M09618 PPG-2 meets the operational and environmental requirements of Launch Complex 34, John F. Kennedy Space Center. A summary of the test results is presented on page viii.

1.2 ITEM DESCRIPTION

One specimen of pressure gauge 75M09618 PPG-2 was tested. The pressure gauge size is 6 inches, and the scale range is 0 to 30 psig. The gauge is designed to indicate pressure with an accuracy of 1.0 per cent for the middle half of the scale and 1.5 per cent of full scale for the remainder. The gauge will be used to indicate pneumatic pressure of the pneumatic distribution portion of the propellant systems.

1.3 APPLICABLE DOCUMENTS

The following documents contain the test requirements for pressure gauge 75M09618 PPG-2:

a. KSC-STD-164(D), dated September 17, 1964, Standard Environmental Test Methods for Ground Support Equipment Installations at Cape Kennedy

b. NASA Drawing 75M09618 PPG-2

c. Test Plan CCSD-FO-1087-1F

d. Test Procedure TP-RE-CCSD-FO-1087-2F

SECTION II

RECEIVING INSPECTION

2.1 TEST REQUIREMENTS

The pressure gauge shall be visually and dimensionally inspected for conformance with NASA drawing 75M09618 PPG-2 and applicable specifications to the extent possible without disassembly of the test specimen. The specimen shall also be inspected for poor workmanship and manufacturing defects.

2.2 TEST PROCEDURE

A visual and dimensional inspection of the test specimen was performed to determine compliance with NASA drawing 75M09618 PPG-2 and the applicable vendor drawing to the extent possible without disassembly of the test specimen. At the same time the test specimen was also inspected for poor workmanship and manufacturing defects.

2.3 TEST RESULTS

The specimen complied with NASA drawing 75M09618 PPG-2. No evidence of poor workmanship or manufacturing defects was observed.

2.4 TEST DATA

The data presented in table 2-1 were recorded during the inspection.

Table 2-1. Specimen Nomenclature and Size

Name	Pressure Gauge
Manufacturer	U. S. Gauge Co.
Model Number	1803
Pressure Range	0-to 30-psig
Dial Size	6 inches
Mounting Flange Diameter	7 3/4 inches
Fitting Size	$\frac{1}{4}$-inch male NPT

SECTION III

FUNCTIONAL TEST

3.1 TEST REQUIREMENTS

3.1.1 The test specimen shall be subjected to an initial functional test consisting of ten cycles from zero to 30 psig using He as the test medium.

3.1.2 The test specimen shall be subjected to five cycles from zero to 30 psig in all subsequent functional tests.

3.1.3 Pressure readings shall be taken in 5-psig increments and monitored. The accuracy of the readings shall be verified with a laboratory gauge.

3.2 TEST PROCEDURE

3.2.1 The test specimen was installed as shown in figures 3-1 and 3-2 using the equipment listed in table 3-1. It was determined that all connections were tight, all gauges were installed and operating properly, and all valves were closed.

3.2.2 Hand valve 4 was opened and pressure regulator 5 adjusted until 50 psig was indicated on laboratory gauge 6.

3.2.3 Vent valve 8 was opened and pressure regulator 7 adjusted so that flow was established to purge the test setup of air.

3.2.4 Pressure regulator 7 was adjusted until zero psig was indicated on laboratory gauge 2. The pressure indication on test specimen 1 was recorded. Vent valve 8 was closed.

3.2.5 Using pressure regulator 7, the pressure was increased to 5 psig as indicated on the test specimen. The pressure indicated on laboratory gauge 2 was recorded.

3.2.6 The procedure described in 3.2.5 was repeated taking pressure readings on the test specimen in 5-psig increments until a pressure of 30 psig was reached.

3.2.7 Using pressure regulator 7 and vent valve 8, the pressure was decreased 5 psig and the pressure indicated on laboratory gauge 2 was recorded.

3.2.8 The procedure described in 3.2.7 was repeated taking pressure readings on test specimen 1 in 5-psig decrements until zero psig was reached.

3.2.9 The procedures described in 3.2.5 through 3.2.8 were repeated for a total of ten cycles during the initial functional test, and five cycles during any subsequent functional tests.

3.3 TEST RESULTS

The test specimen demonstrated satisfactory accuracy, operation and resolution during the initial functional test. The test specimen indication was exact at zero, and a maximum of 0.66 per cent of full scale high was evident from 5 through 30 psi.

3.4 TEST DATA

The data presented in table 3-2 were recorded during the test.

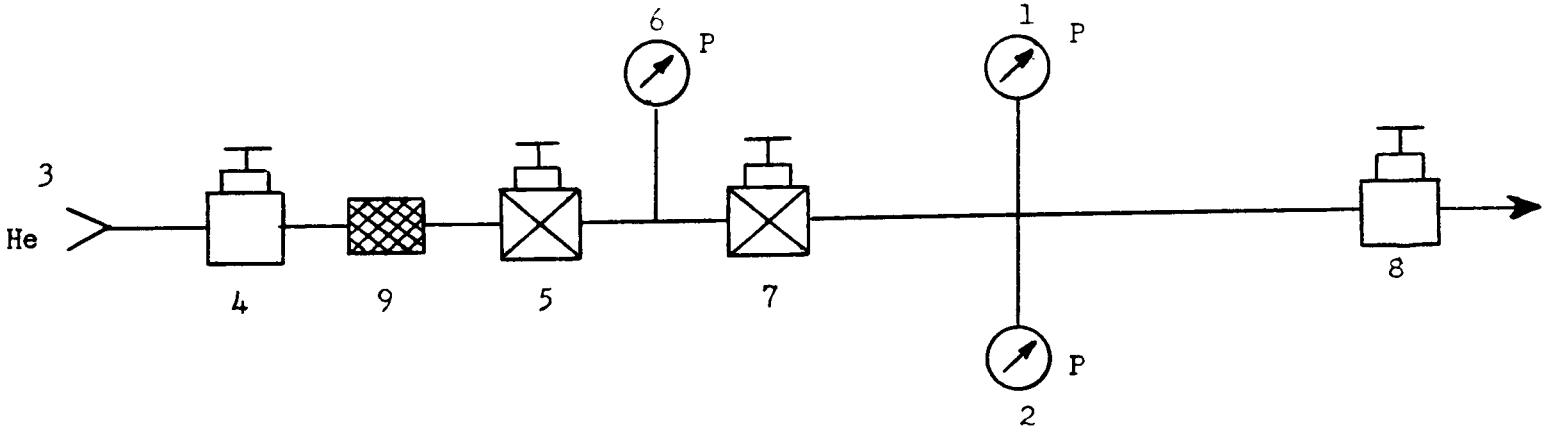
Table 3-1. Functional Test Equipment List

Item No.	Item	Manufacturer	Model/ Part No.	Serial No.	Remarks
1	Test Specimen	U.S. Gauge Co.	1803	NA	0-to 30-psig, 1.5% FS accuracy
2	Laboratory Gauge	Heise	H39702	NASA 80-113-95-1392-B	0-to 60-psig, 0.1% FS accuracy; cal. date 10/21/66
3	Helium Supply	NA	NA	NA	6000-psig
4	Hand Valve	CPV	380-3	NA	He supply
5	Pressure Regulator	Grove	15-KX	104911-1	6000-psig inlet, 0-to 125-psig outlet
6	Laboratory Gauge	Heise	NASA 08-113-108-1001-B	H41248	0-to 100-psig 0.5% FS accuracy; cal. date 10/2/66
7	Pressure Regulator	Tescom	26-1003	1001	100-psig inlet 0-to 50-psig outlet
8	Vent Valve	Robbins	SSKG 250 -4T	NA	$\frac{1}{4}$-inch
9	Filter	Microporous	48135-DM	NA	2-micron

Table 3-2. Initial Functional Test Data

Specimen Indication (psig)	Laboratory Gauge Indication (psig)									
	1	2	3	4	5	6	7	8	9	10
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	4.90	4.90	4.90	4.93	4.94	4.96	4.98	4.95	4.92	4.90
10	9.90	9.90	9.95	9.95	9.98	9.98	9.95	9.97	9.98	9.97
15	14.95	14.95	14.95	15.00	15.00	14.98	14.98	15.00	15.00	15.00
20	20.05	20.05	20.02	20.04	20.05	20.05	20.05	20.05	20.04	20.05
25	24.95	24.95	24.95	25.00	25.00	25.00	25.00	25.00	25.02	25.02
30	29.8	29.80	29.80	29.80	29.85	29.85	29.85	29.85	29.85	29.85
25	24.95	24.90	24.90	24.95	25.00	24.95	24.98	25.00	25.00	25.95
20	20.00	20.00	20.00	20.02	20.02	20.04	20.05	20.05	20.05	20.05
15	14.95	14.90	14.90	14.95	15.00	15.00	14.95	14.98	14.98	15.00
10	9.90	9.95	9.95	9.95	9.98	9.98	9.95	9.97	9.96	9.98
5	4.90	4.90	4.90	4.95	4.90	4.95	4.90	4.95	4.90	4.90
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Leakage	None
Distortion	None



Note: All lines $\frac{1}{4}$-inch.
Refer to table 3-1 for item identification.

Figure 3-1. Functional Test Schematic

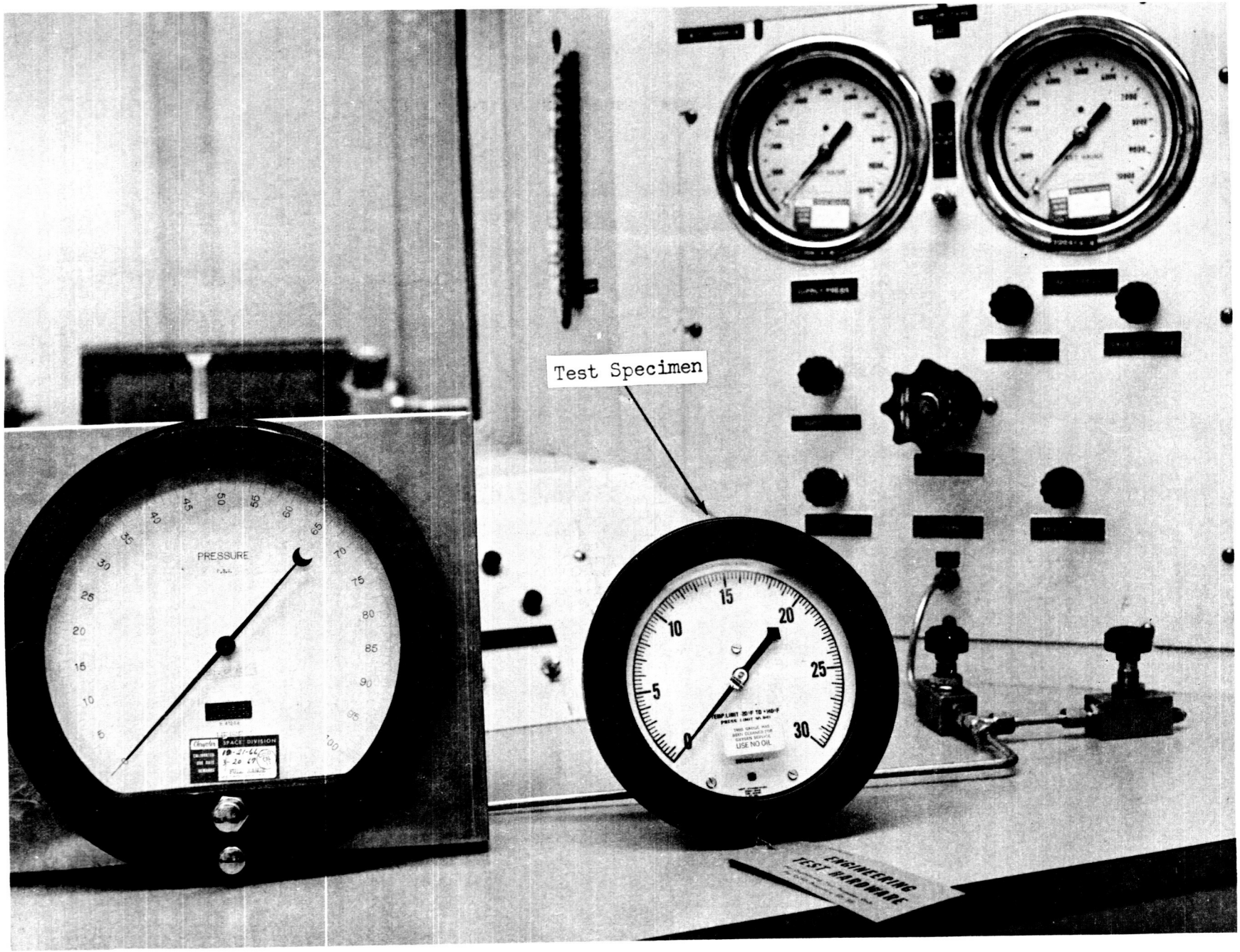


Figure 3-2. Functional Test Setup

SECTION IV

SURGE TEST

4.1 TEST REQUIREMENTS

4.1.1 A surge test shall be performed on the test specimen to determine whether cyclic pressure surges will cause degradation or deformation.

4.1.2 The surge test shall consist of pressurizing the specimen from zero to 20 psig within 100 milliseconds using He or GN_2.

4.1.3 Twenty cycles shall be performed.

4.2 TEST PROCEDURE

4.2.1 The surge test setup was assembled as shown in figures 4-1 and 4-2 using the equipment listed in table 4-1. It was determined that all connections were tight, all gauges were installed and operating properly, and all valves were closed.

4.2.2 Vent valve 14 was opened and then hand valve 12 was opened.

4.2.3 Pressure regulator 8 was adjusted until 20 psig was indicated on pressure gauge 6.

4.2.4 Solenoid valve 7 was activated, hand valve 4 was opened and flow regulator 5 was adjusted until a flow was established to purge the system of air. Vent valve 14 was closed when the system was purged.

4.2.5 Solenoid valve 7 was cycled and flow regulator 5 was adjusted until a pressure increase from zero to 20 psig within 100 milliseconds was established.

4.2.6 After the surge cycle was established, test specimen 1 was subjected to 20 cycles as indicated by counter 10. The cycles were counted on oscillograph recorder 2.

4.2.7 A functional test was performed on test specimen 1 and test data were recorded.

4.2.8 TEST RESULTS

The test specimen did not leak. There was no deformation or degradation of performance.

4.2.9 TEST DATA

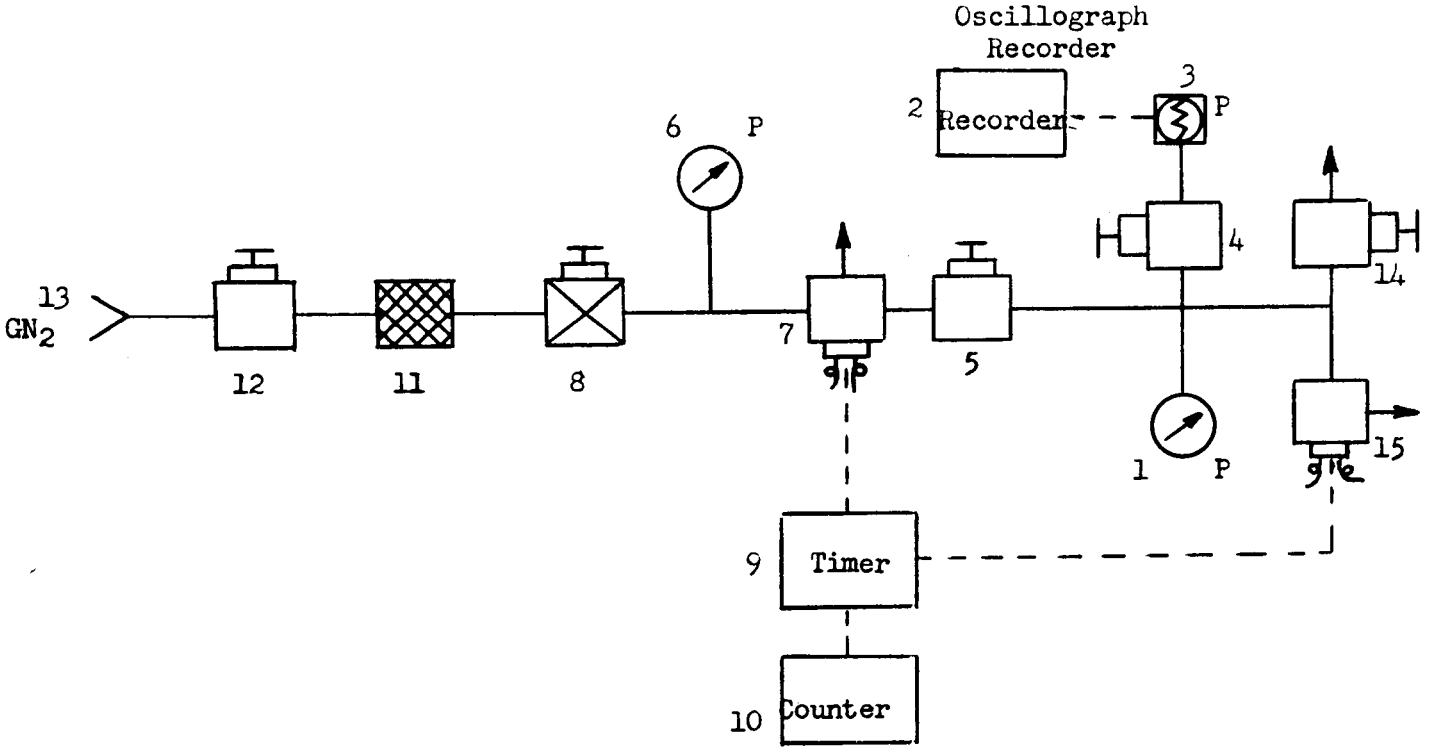
The functional test data presented in table 4-2 were recorded after the surge test.

Table 4-1. Surge Test and Cycle Test Equipment List

Item No.	Item	Manufacturer	Model/ Part No.	Serial No.	Remarks
1	Test Specimen	U.S. Gauge Co.	1803	NA	0-to 30-psig 1.5% FS accuracy
2	Oscillograph Recorder	Consolidated Electrodynamics Corp.	08-113-017-887	NA	
3	Pressure Transducer	Consolidated Electrodynamics	4-350-0001	3231 0-100 psi	0-to 60-psig ±½% FS accuracy
4	Hand Valve	Robbins Aviation Inc.	SSKG 250 4T	NA	¼-inch
5	Flow Regulator	Robbins Aviation Inc.	SSKG-250 -4T	NA	¼-inch
6	Pressure Gauge	Heise	08-113-85-1392-B	NA	0-to 100-psig 0.5% FS accuracy cal. date 10/21/66
7	Solenoid Valve	Marotta	MV-74	17216	3-way
8	Pressure Regulator	Grove	NA	104921-1	3000-psig inlet 0-to 50-psig outlet
9	Cycle Timer	Creamer Control	523	Y2389A	
10	Counter	General Controls	616	NA	
11	Filter	Bendix Corp.	2-S-134 60-16B-0	60	2-micron absolute
12	Hand Valve	Robbins Aviation	SSKG 250 -4T	NA	1-½-inch
13	GN_2 Supply				3000-psig
14	Vent Valve	Robbins Aviation	SSKG-250 -4T	NA	¼-inch
15	Solenoid Valve	Marotta	MV-74	17236	

Table 4-2. Functional Test Data After Surge Test

Specimen Indication (psi)	Laboratory Gauge Indication (psi)				
	1	2	3	4	5
0	0.00	0.00	0.00	0.00	0.00
5	4.90	4.90	4.95	4.90	4.97
10	9.93	9.98	9.93	9.92	9.95
15	14.98	14.98	14.98	14.98	14.99
20	20.03	20.05	20.04	20.05	20.03
25	24.90	24.92	25.02	25.00	25.00
30	29.82	29.85	29.85	29.82	29.85
25	25.00	25.00	25.00	25.00	24.98
20	20.05	20.00	20.02	20.03	20.01
15	14.95	14.98	14.97	14.97	14.96
10	9.93	9.95	9.94	9.92	9.95
5	4.95	4.90	4.94	4.90	4.91
0	0.00	0.00	0.00	0.00	0.00
Leakage	None				
Distortion	None				



Note: All lines $\frac{1}{4}$-inch.
Refer to table 4-1 for item identification.

Figure 4-1. Surge Test and Cycle Test Schematic

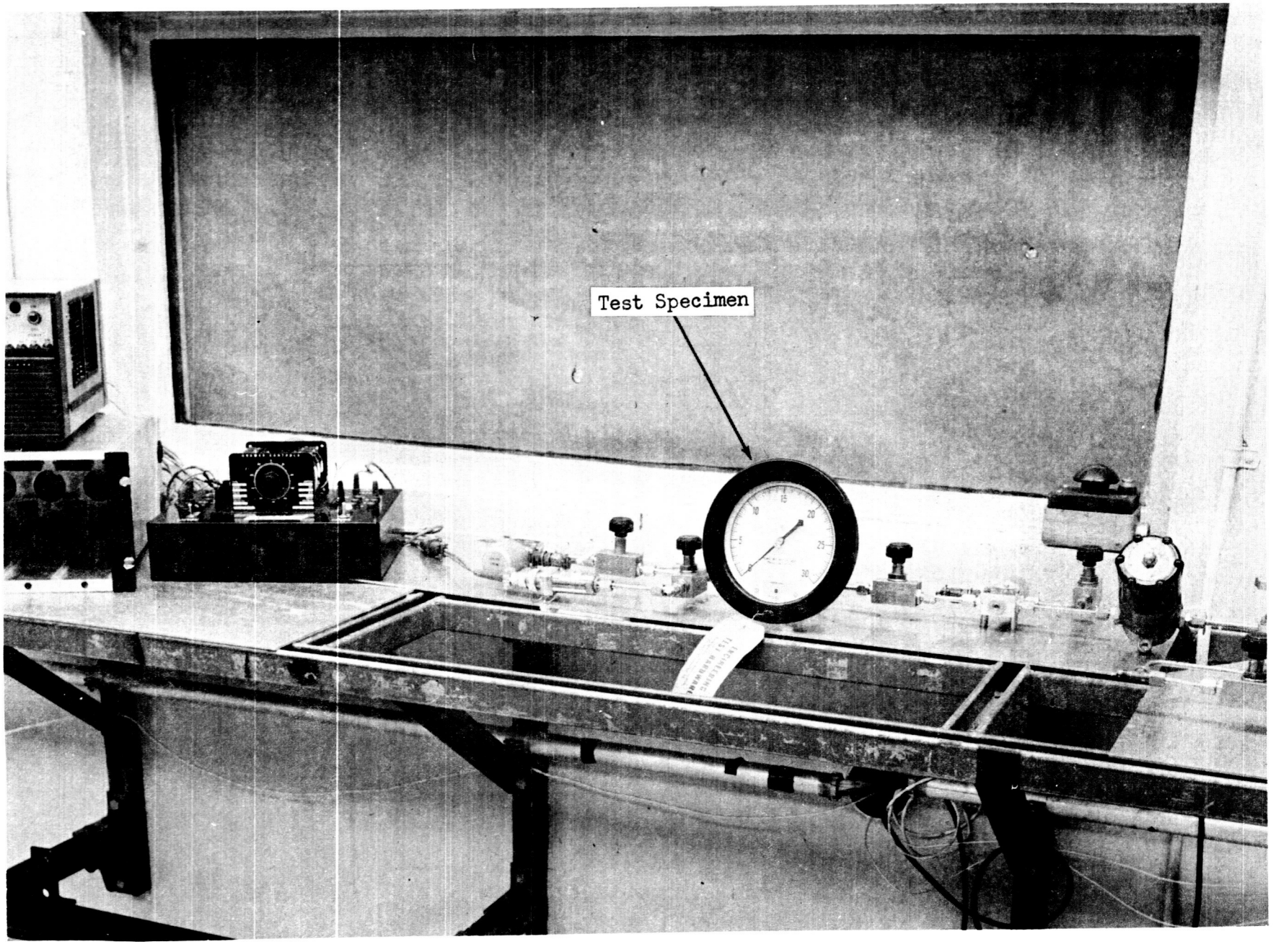


Figure 4-2. Surge Test and Cycle Test Setup

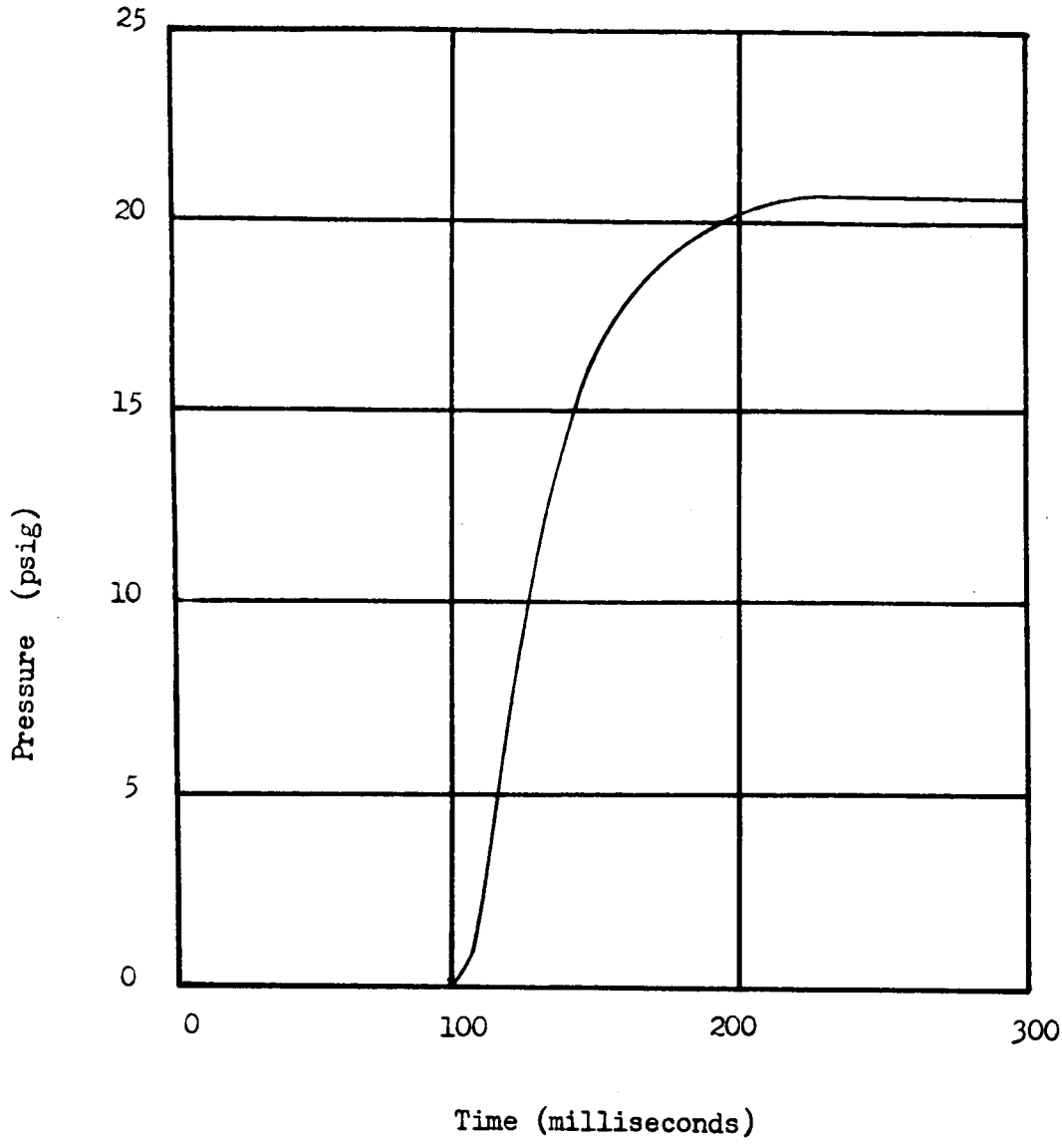


Figure 4-3. Typical Surge Pressure Cycle

SECTION V

CYCLE TEST

5.1 TEST REQUIREMENTS

5.1.1 A cycle test shall be performed on the test specimen to determine whether continued cycling causes degradation or deformation.

5.1.2 One cycle shall consist of pressurizing the test specimen from zero to 30 psig and back to zero in 6 to 10 seconds.

5.1.3 Conduct 40,000 cycles performing functional tests after 500, 1000, 5000, and each 5000 thereafter.

5.2 TEST PROCEDURE

5.2.1 The cycle test setup was assembled as shown in figures 4-1 and 4-2 using the equipment listed in table 4-1. It was determined that all connections were tight, all gauges were installed and operating properly, and all valves were closed.

5.2.2 Vent valve 14 was opened and then hand valve 12 was opened.

5.2.3. Pressure regulator 8 was adjusted until 30 psig was indicated on pressure gauge 6.

5.2.4 Solenoid valve 7 was activated, hand valve 4 was opened, and flow regulator 5 was adjusted until a flow was established to purge the system of air. Vent valve 14 was closed when the system was purged.

5.2.5 Solenoid valves 7 and 15 were cycled and flow regulator 5 was adjusted until a pressure rise from zero to 30 psig and back to zero within 12 seconds was established.

5.2.6 After the cycle had been established, the test specimen was subjected to 40,000 cycles as indicated by counter 10. Periodically the pressure rise and decay time was checked on oscillograph recorder 2.

5.2.7 A functional test was performed on test specimen 1 after 500, 1000, 5000 and each 5000 cycles thereafter.

5.3 TEST RESULTS

The test specimen did not leak. There was no deformation or degradation of performance.

5.4 TEST DATA

The functional test data in tables 5-1 through 5-10 were recorded after 500, 1000, 5000 and each 5000 cycles thereafter.

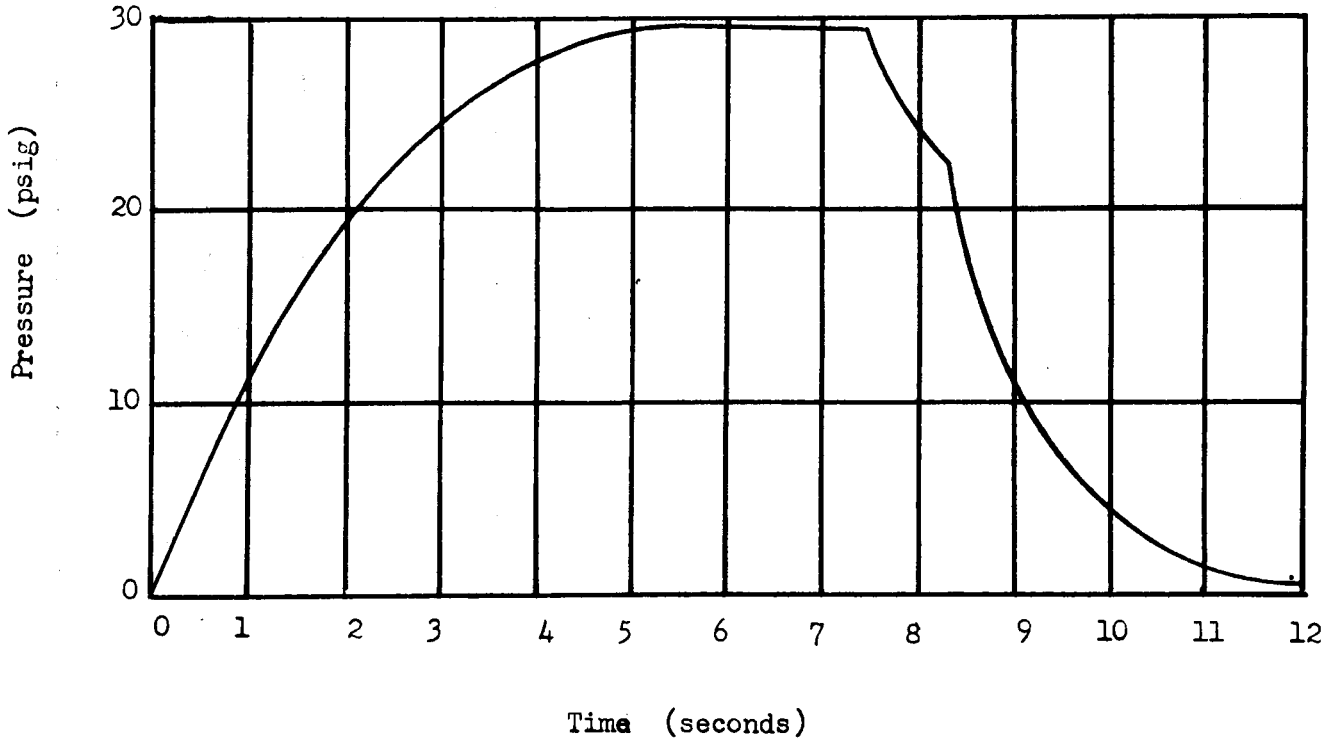


Figure 5-1. Typical Pressure Cycle Waveform

Table 5-1. Functional Test Data After 500 Cycles

Specimen Indication (psi)	Laboratory Gauge Indication (psi)				
	1	2	3	4	5
0	0.00	0.00	0.00	0.00	0.00
5	4.85	4.85	4.88	4.88	4.87
10	9.83	9.85	9.83	9.84	9.87
15	14.85	14.87	14.88	14.88	14.88
20	19.94	19.94	19.94	19.92	19.94
25	24.83	24.88	24.90	24.90	24.88
30	29.75	29.75	29.77	29.78	29.76
25	24.85	24.90	24.90	24.89	24.91
20	19.93	19.90	19.90	19.89	19.90
15	14.88	14.82	14.85	14.85	14.86
10	9.85	9.84	9.85	8.84	9.84
5	4.87	4.87	4.86	4.80	4.82
0	0.00	0.00	0.00	0.00	0.00
Leakage	None				
Distortion	None				

Table 5-2. Functional Test Data After 1000 Cycles

Specimen Indication (psi)	Laboratory Gauge Indication (psi)				
	1	2	3	4	5
0	0.00	0.00	0.00	0.00	0.00
5	4.88	4.85	4.85	4.88	4.87
10	9.82	9.84	9.85	9.84	9.87
15	14.85	14.88	14.87	14.86	14.85
20	19.94	19.92	19.90	19.90	19.92
25	24.90	24.85	24.90	24.85	24.89
30	29.75	29.76	29.76	29.75	29.76
25	24.81	24.83	24.85	24.85	24.88
20	19.87	19.90	19.88	19.90	19.91
15	14.85	14.85	14.85	14.85	14.84
10	9.85	9.83	9.80	9.82	9.85
5	4.80	4.81	4.84	4.85	4.80
0	0.00	0.00	0.00	0.00	0.00
Leakage	None				
Distortion	None				

Table 5-3. Functional Test Data After 5000 Cycles

Specimen Indication (psi)	Laboratory Gauge Indication (psi)				
	1	2	3	4	5
0	0.00	0.00	0.00	0.00	0.00
5	4.84	4.85	4.84	4.85	4.83
10	9.88	9.90	9.90	9.90	9.90
15	14.90	14.90	14.91	14.90	14.90
20	19.99	20.00	19.98	19.99	20.00
25	24.93	24.92	24.91	24.92	24.96
30	29.80	29.77	29.75	29.98	29.78
25	24.91	24.91	24.85	24.92	24.94
20	19.97	19.94	19.90	19.95	19.98
15	14.88	14.90	14.89	14.89	14.89
10	9.88	9.88	9.87	9.89	9.89
5	4.81	4.81	4.88	4.85	4.85
0	0.00	0.00	0.00	0.00	0.00
Leakage	None				
Distortion	None				

Table 5-4. Functional Test Data After 10,000 Cycles

Specimen Indication (psi)	Laboratory Gauge Indication (psi)				
	1	2	3	4	5
0	0.00	0.00	0.00	0.00	0.00
5	4.80	4.81	4.80	4.86	4.85
10	9.81	9.85	9.85	9.89	9.90
15	14.89	14.88	14.90	14.89	14.90
20	19.93	19.99	20.00	19.99	20.00
25	24.88	24.91	24.93	24.91	24.93
30	29.71	29.73	29.74	29.75	29.79
25	24.90	24.90	24.93	24.89	24.91
20	19.93	19.92	19.92	19.94	19.92
15	14.82	14.83	14.87	14.88	14.84
10	9.88	9.90	9.79	9.80	9.80
5	4.80	4.80	4.78	4.78	4.85
0	0.00	0.00	0.00	0.00	0.00

Leakage None

Distortion None

Table 5-5. **Functional Test Data After 15,000 Cycles**

Specimen Indication (psi)	Laboratory Gauge Indication (psi)				
	1	2	3	4	5
0	0.00	0.00	0.00	0.00	0.00
5	4.90	4.84	4.84	4.87	4.81
10	9.85	9.84	9.84	9.83	9.82
15	14.85	14.90	14.89	14.89	14.90
20	19.90	19.94	19.94	19.94	19.90
25	24.89	24.900	24.88	24.90	24.87
30	29.80	29.80	29.79	29.78	29.78
25	24.90	24.88	24.87	24.88	24.90
20	19.89	19.93	19.87	19.9	19.90
15	14.83	14.83	14.83	14.84	14.88
10	9.79	9.83	9.88	9.88	9.88
5	4.87	4.80	4.75	4.75	4.82
0	0.00	0.00	0.00	0.00	0.0 0
Leakage	None				
Distortion	None				

Table 5-6. Functional Test Data After 20,000 Cycles

Specimen Indication (psi)	Laboratory Gauge Indication (psi)				
	1	2	3	4	5
0	0.00	0.00	0.00	0.00	0.00
5	4.80	4.80	4.90	4.80	4.80
10	9.85	9.80	9.90	9.85	9.80
15	14.85	14.85	14.90	14.80	14.85
20	19.95	19.90	20.000	19.90	19.95
25	24.88	24.85	24.90	24.80	24.80
30	29.70	29.70	29.80	29.70	29.70
25	24.80	24.75	24.80	24.80	24.80
20	19.95	19.90	19.70	19.80	19.80
15	14.75	14.80	14.80	14.75	14.80
10	9.78	9.75	9.80	9.80	9.80
5	4.78	4.70	4.60	4.75	4.70
0	0.00	0.00	0.00	0.00	0.00

Leakage None

Distortion None

Table 5-7. Functional Test Data After 25,000 Cycles

Specimen Indication (psi)	Laboratory Gauge Indication (psi)				
	1	2	3	4	5
0	0.00	0.00	0.00	0.00	0.00
5	4.85	4.87	4.90	4.90	4.80
10	9.80	9.83	9.90	9.90	9.80
15	14.83	14.80	14.90	14.90	14.80
20	19.85	19.95	20.00	20.00	19.90
25	24.90	24.85	24.95	24.95	24.85
30	29.70	29.75	29.80	29.80	29.80
25	24.80	24.60	24.65	24.65	24.75
20	19.90	19.75	19.80	19.80	19.85
15	14.70	14.70	14.70	14.70	14.70
10	9.75	9.95	9.70	9.75	9.75
5	4.70	4.6	4.60	4.62	4.70
0	0.00	0.00	0.00	0.00	0.00
Leakage	None				
Distortion	None				

Table 5-8. Functional Test Data After 30,000 Cycles

Specimen Indication (psi)	Laboratory Gauge Indication (psi)				
	1	2	3	4	5
0	0.00	0.00	0.00	0.00	0.00
5	4.69	4.64	4.70	4.69	4.70
10	9.71	9.70	9.70	9.70	9.70
15	14.70	14.70	14.70	14.69	14.70
20	19.76	19.77	19.76	19.79	19.78
25	24.70	24.70	24.70	24.70	24.71
30	29.60	29.61	29.60	29.60	29.60
25	24.64	24.75	24.63	24.65	24.75
20	19.75	19.73	19.75	19.75	19.57
15	14.70	14.70	14.70	14.70	14.70
10	9.70	9.70	9.71	9.71	9.70
5	4.70	4.70	4.70	4.69	4.70
0	0.00	0.00	0.00	0.00	0.00
Leakage	None				
Distortion	None				

Table 5-9. Functional Test Data After 35,000 Cycles

Specimen Indication (psi)	Laboratory Gauge Indication (psi)				
	1	2	3	4	5
0	0.00	0.00	0.00	0.00	0.00
5	4.80	4.80	4.81	4.79	4.82
10	9.76	9.81	9.80	9.80	9.80
15	14.82	14.82	14.88	14.88	14.81
20	19.78	19.88	19.89	19.88	19.88
25	24.80	24.82	24.78	24.81	24.80
30	29.74	29.71	29.70	29.71	29.70
25	24.80	24.80	24.78	24.79	24.75
20	19.85	19.75	19.80	19.89	19.83
15	14.79	14.75	14.79	14.80	14.80
10	9.79	9.76	9.80	9.83	9.82
5	4.78	4.75	4.73	4.79	4.82
0	0.00	0.00	0.00	0.00	0.00
Leakage	None				
Distortion	None				

Table 5-10. Functional Test Data After 40,000 Cycles

Specimen Indication (psi)	Laboratory Gauge Indication (psi)				
	1	2	3	4	5
0	0.00	0.00	0.00	0.00	0.00
5	4.80	4.70	4.70	4.69	4.72
10	9.79	9.71	9.70	9.70	9.74
15	14.83	14.78	14.75	14.75	14.76
20	19.89	19.80	19.83	19.82	19.85
25	24.84	24.79	24.77	24.78	24.81
30	29.65	29.62	29.65	29.62	29.65
25	24.73	24.78	24.78	24.76	24.77
20	19.80	19.81	19.81	19.81	19.81
15	14.74	14.75	14.74	14.75	14.74
10	9.70	9.72	9.72	9.75	9.74
5	4.70	4.71	4.70	4.70	4.70
0	0.00	0.00	0.00	0.00	0.00
Leakage	None				
Distortion	None				

SECTION VI

BURST TEST

6.1 TEST REQUIREMENTS

6.1.1 A burst test shall be performed on the test specimen to determine if abnormally high pressure will cause leakage or structural damage.

6.1.2 The test specimen shall be subjected to water pressure of 120 psig for 5 minutes.

6.1.3 Any leakage or structural damage to the test specimen shall be noted

6.2 TEST PROCEDURE

6.2.1 The burst test setup was assembled as shown in figures 6-1 and 6-2 using the equipment listed in table 6-1. It was determined that all connections were tight, all gauges were installed and operating properly, and all valves were closed.

6.2.2 Hand valves 3 and 4 were opened.

6.2.3 The system was bled using pressure from hand pump 5 until system was free of air.

6.2.4 Hand valve 3 was closed.

6.2.5 Using hand pump 5, the water pressure was increased to 120 psig as indicated on laboratory gauge 2.

6.2.6 Hand valve 4 was closed.

6.2.7 The pressure was monitored for 5 minutes, checking test specimen 1 for any visible leakage or damage.

6.2.8 Pressure was relieved on hand pump 5.

6.2.9 The system was vented through hand valve 3.

6.3 TEST RESULTS

No visible leakage occurred, however, test specimen indicated 10 psi with pressure relieved.

6.4 TEST DATA

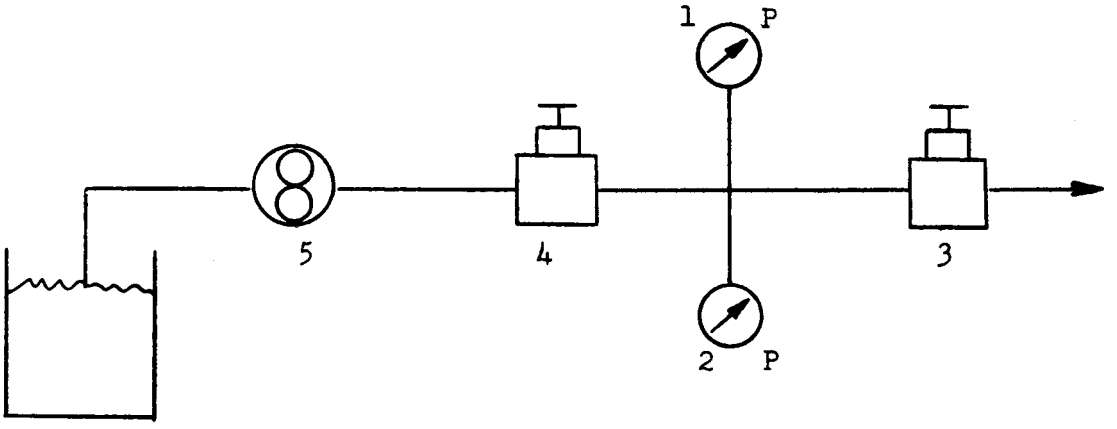
The burst test data were recorded in table 6-2.

Table 6-1. Burst Test Equipment List

Item No.	Item	Manufacturer	Model/ Part No.	Serial No.	Remarks
1	Test Specimen	U.S. Gauge Co.	1803	NA	0-to 30-psig 1.5% FS accuracy
2	Laboratory Gauge	Marsh	NA	95-1252-B	0-to 160-psig 0.5% FS accuracy Cal. date 8/18/66
3	Hand Valve	Robbins	SSKA-250-4T	NA	¼-inch
4	Hand Valve	Robbins	SSKA-250-4T	NA	¼-inch
5	Hand Pump	Pressure Products Inc.	NA	K-750	
6	Water Reservoir	CCSD	NA	NA	

Table 6-2. Burst Test Data

Pressure	120 psig for 5 min.
Leakage	Zero
Distortion	Gauge indicates 10 psig with pressure relieved



Note: All lines $\frac{1}{4}$-inch.
Refer to table 6-1 for item identification

Figure 6-1. Burst Test Schematic

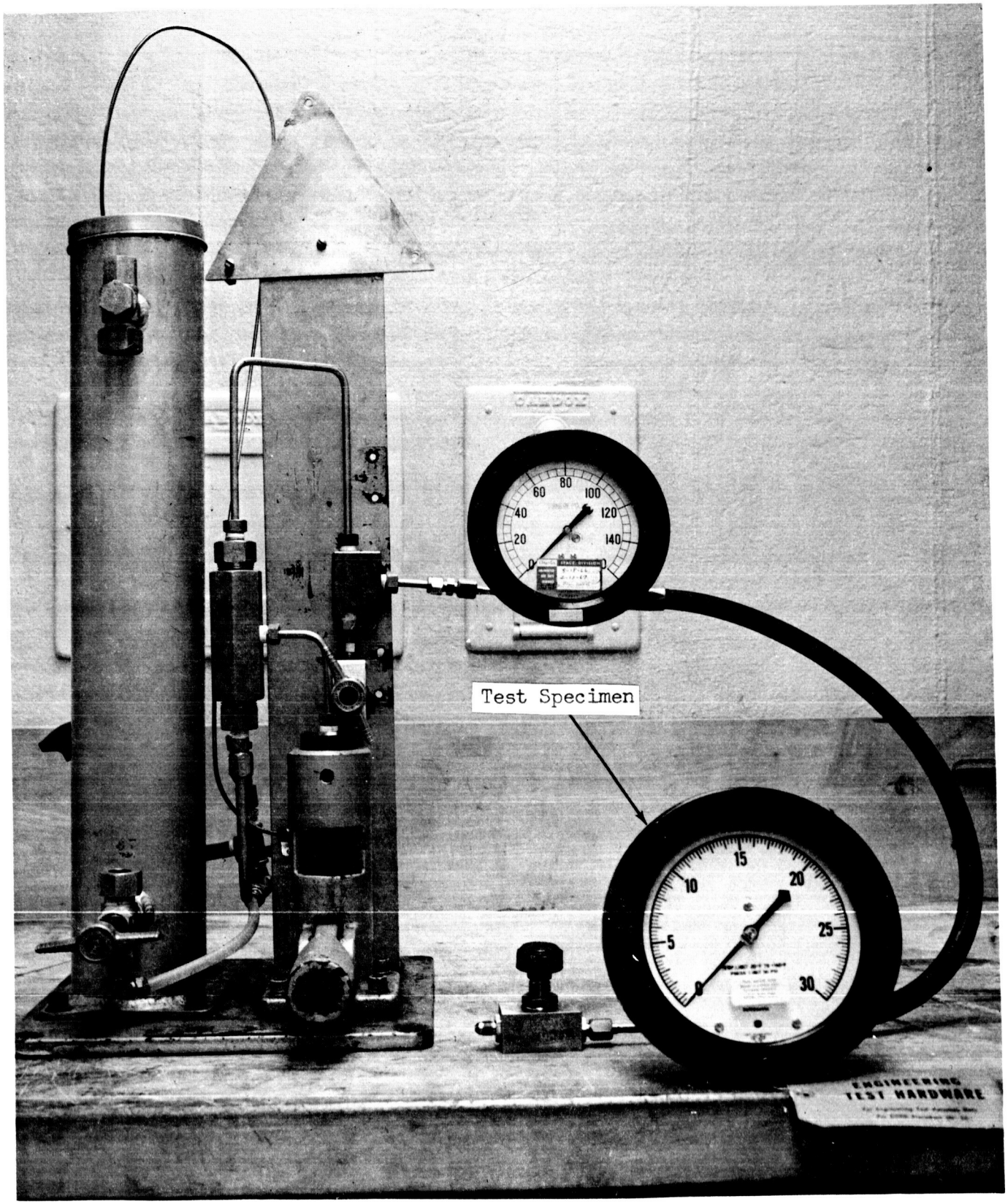


Figure 6-2. Burst Test Setup

APPROVAL

TEST REPORT

FOR

PRESSURE GAUGE, 6-INCH, 0-to 30-PSIG

U.S. Gauge Company Part Number 1803

NASA Drawing Number 75M09618 PPG-2

SUBMITTED BY:

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PUBLICATION CHANGE

THE FOLLOWING CHANGES APPLY TO PUBLICATION: TECHNICAL REPORT

TITLE: Test Report for Pressure Gage, 6-Inch, 0 to 30 Psig
U. S. Gauge Co. Part Number 1803, NASA Drawing No. 75M04406 PPG-2

NUMBER: TR-RE-CCSD-FO-1087-3 DATE: Jan. 24, 1967 BRANCH: Reliability Engineering

1. Revise page vii, CHECK SHEET FOR PRESSURE GAGE, 6-INCH, 0 TO 30 PSIG, as follows:

   II. CONSTRUCTION

   C. CONNECTION: AND 10050-4 port.

2. Revise page 2-1, table 2-1 as follows:

   Fitting Size AND 10050-4

PREPARED BY: M R Watts
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SPACE DIVISION CHRYSLER CORPORATION

DATE: April 17, 1967

PUBLICATION CHANGE

THE FOLLOWING CHANGES APPLY TO PUBLICATION: TECHNICAL REPORT

TITLE: TEST REPORT FOR PRESSURE GAGE, 6-INCH, 0-1500 PSIG

U. S. Gauge Company Part Number 1838, NASA Drawing No. 75M09618

NUMBER: TR-RE-CCSD DATE: Jan. 31, 1967 BRANCH: Reliability Engineering
FO-1088-3

1. Revise page vii, CHECK SHEET FOR PRESSURE GAGE, 6-INCH, 0 TO 1500 PSIG as follows:

   II. CONSTRUCTION

   C. CONNECTION: AND 10050-4 port

2. Revise page 2-2 as follows:

   Fitting Size AND 10050-4

3. Revise page 6-2, Table 6-1, Item #1, Serial No. as follows:

Item No.	Serial No.
1	75M09618 PPG-3

PREPARED BY: M R Watts
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